HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

PATENT APPLICATION

ATTORNEY DOCKET NO. 200315232-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): John M. Koegler III et al.

Confirmation No.: 8307

Application No.: 10/661,722

Examiner: Lamb, Christopher Ray

Filing Date: 09/12/2003

Group Art Unit: 2627

Title: Optical Disk Drive Modified for Speed and Orientation Tracking

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on 07/15/08.

☒ The fee for filing this Appeal Brief is $510.00 (37 CFR 41.20).

☐ No Additional Fee Required.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

☐ 1st Month $120	☐ 2nd Month $460	☐ 3rd Month $1050	☐ 4th Month $1640

☐ The extension fee has already been filed in this application.

☒ (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 08-2025 the sum of $ 510. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees.

☒ A duplicate copy of this transmittal letter is enclosed.

☐ I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450

Date of Deposit:

OR

☒ I hereby certify that this paper is being transmitted to the Patent and Trademark Office facsimile number (571)273-8300.

Date of facsimile: 08/01/08

Typed Name: JoAnn Sismilich

Signature: JoAnn Sismilich

Respectfully submitted,

John M. Koegler III et al.

By _____

Robert C. Sismilich

Attorney/Agent for Applicant(s)

Reg No.: 41,314

Date: 8/1/08

Telephone: (941) 677-6015

Rev 10/07(AplBrief)

PATENT APPLICATION

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

ATTORNEY DOCKET NO. 200315232-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): John M. Koegler III et al.

Confirmation No.: 8307

Application No.: 10/661,722

Examiner: Lamb, Christopher Ray

Filing Date: 09/12/2003

Group Art Unit: 2627

Title: Optical Disk Drive Modified for Speed and Orientation Tracking

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on 07/15/08.

☒ The fee for filing this Appeal Brief is $510.00 (37 CFR 41.20).

☐ No Additional Fee Required.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

☐ 1st Month $120	☐ 2nd Month $460	☐ 3rd Month $1050	☐ 4th Month $1640

☐ The extension fee has already been filed in this application.

☒ (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 08-2025 the sum of $ 510. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees.

☒ A duplicate copy of this transmittal letter is enclosed.

☐ I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450
Date of Deposit:

OR

☒ I hereby certify that this paper is being transmitted to the Patent and Trademark Office facsimile number (571)273-8300.
Date of facsimile: 08/01/08
Typed Name: JoAnn Sismilich
Signature: JoAnn Sismilich

Respectfully submitted,
John M. Koegler III et al.
By [signature]
Robert C. Sismilich
Attorney/Agent for Applicant(s)
Reg No.: 41,314
Date: 8/1/08
Telephone: (941) 677-6015

Rev 10/07(ApiBrief)

RECEIVED
CENTRAL FAX CENTER
AUG 0 1 2008

HP Docket No. 200315232-1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	:10/661,722
Conf. No.	:8307
Appellant	:Koegler III et al.
Filed	:09/12/2003
Title	:Optical Disk Drive Modified for Speed and Orientation Tracking
TC / Art Unit	:2627
Examiner	:Lamb, Christopher Ray
Docket No.	:200315232-1
Customer No.	:022879

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

APPELLANTS' APPEAL BRIEF

Sir:

Appellants are appealing from the Final Rejection of claims 2-4, 6-22, and 24-33 in an Office Action dated 05/23/2008. The Notice of Appeal was filed on 07/15/08.

I. REAL PARTY IN INTEREST

The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holding, LLC.

08/01/2008 HMARZI1 00000044 082025 10661722

01 FC:1402 510.00 DA

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to the real party in interest which will directly affect or be directly affected by, or have a bearing on, the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 2-4, 6-22, and 24-33 are pending. Claims 1, 5, and 23 have been previously canceled. All of claims 2-4, 6-22, and 24-33 stand finally rejected. The Appellants appeal the final rejection of claims 2-4, 6-22, and 24-33.

IV. STATUS OF AMENDMENTS

No response was filed after final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The summary is set forth in exemplary embodiments. Discussion of the claimed subject matter can be found at least at the locations in the specification and drawings as identified below.

Independent claims 13, 21, and 22 are under appeal. The claimed subject matter relates to an optical disk drive for marking an optical disk that includes a label region having writeable material. Rings of features on the optical disk can be monitored to assist in properly applying the markings for a desired image to the writeable material. Fig. 7, and a portion of Fig. 1, of the present application are reproduced below. Fig. 7 illustrates the optical disk drive 700. The portion of Fig. 1 illustrates the rings of disk speed features and disk angular orientation features.

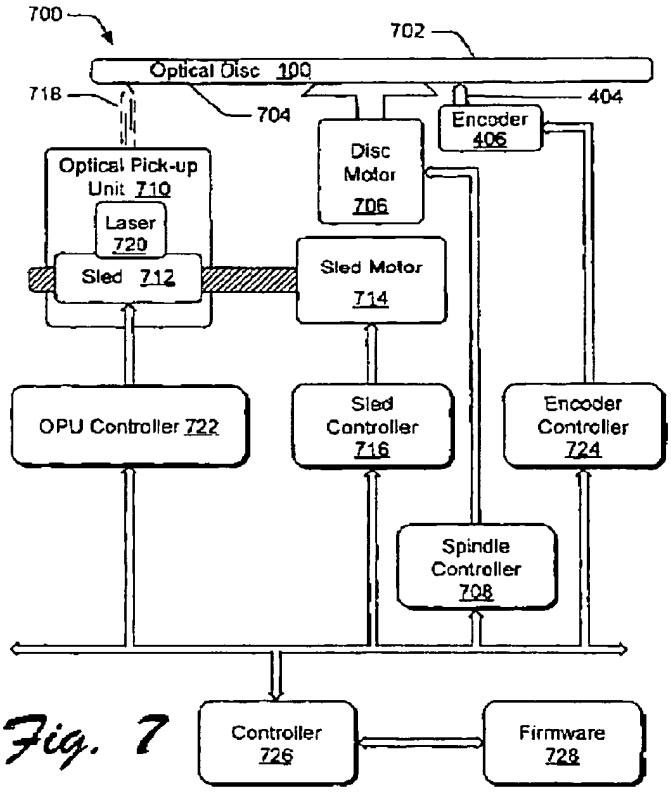


Fig. 7

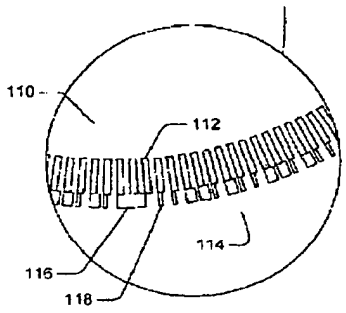


Fig. 1

Independent claim 21 recites an optical disk drive 700 (Fig. 7) (p.10, ln.32). The disk drive 700 (Fig. 1) includes a spindle motor 706 (Fig. 7) to turn an optical disk 100 (Figs. 1,7) (p.11, ln.6-7). The disk drive 700 (Fig. 7) also includes an OPU 710 (Fig. 7) to apply an image to a coating within a label region 106 (Fig. 1) of the optical disk 100 (Figs. 1,7) (p.11, ln.7-13). The disk drive 700 (Fig. 1) also includes an encoder 406 (Fig. 7) configured to track substantially identical disk speed features 112 (Fig. 1) in a first annular ring at a first radial position on the optical disk 100 (Fig. 1) in a region distinct from the label region 106 (Fig. 1) so as to thereby obtain disk speed data, the disk drive 700 (Fig. 7) further configured to track disk angular orientation features 114 (Fig. 1) different from the disk speed features 112 (Fig.

1) in a second annular ring at a second radial position on the optical disk 100 (Fig. 1) so as to thereby obtain angular orientation data, the second annular ring abutting the first annular ring, the annular rings proximate a central hub 102 (Fig. 1) of the disk 100 (Fig. 1), the disk angular orientation features 114 (Fig. 1) different from the disk speed features 112 (Fig. 1), and at least some of the disk angular orientation features 114 (Fig. 1) having an overlapping angular position with at least some of the disk speed features 112 (Fig. 1) (p.10, ln.32 – p.11, ln.29; p.8, ln.6 – p.9, ln.4).

Independent claim 22 recites a processor-readable medium comprising processor-executable instructions for labeling an optical disk 100 (Figs. 1,7) (p.12, ln.7-9). The processor-executable instructions comprise instructions for performing operations. These operations include controlling a spindle motor 706 (Fig. 7) within an optical disk drive 700 (Fig. 7) to regulate angular speed of the optical disk 100 (Figs. 1,7) (p.12, ln.10-20). The operations also include interpreting output signals of an encoder 406 (Fig. 7) resulting from sensation of substantially identical disk speed features 112 (Fig. 1) defined in a first annular ring at a first radial position on the optical disk 100 (Figs. 1,7) as the optical disk 100 (Figs. 1,7) is spun by the spindle motor 706 (Fig. 7) to produce disk speed data (p.12, ln.10-20). The operations further include tracking disk angular orientation features 114 (Fig. 1) defined in a second annular ring at a second radial position on the optical disk 100 (Figs. 1,7) and different from the disk speed features 112 (Fig. 1) to produce disk angular orientation data, at least some of the disk angular orientation features 114 (Fig. 1) having an overlapping angular position with at least some of the disk speed features 112 (Fig. 1), the second annular ring abutting the first annular ring, and the annular rings proximate a central hub 102 (Fig. 1) of the disk 100 (Fig. 1) (p.12, ln.24-32; p.8, ln.6 – p.9, ln.4). The operations also include marking a coating on the optical disk 100 (Figs. 1,7) with an OPU 710 (Fig. 7), wherein the OPU 710 (Fig. 7) is operated according to the disk speed data and the disk angular orientation data (p.12, ln.32 – p.13, ln.6).

Independent claim 13 recites an optical disk drive 700 (Fig. 7) (p.11, ln.5). The disk drive 700 (Fig. 1) includes means for controlling a rate at which a spindle motor 706 (Fig. 7) spins an optical disk 100 (Figs. 1,7) (p.12, ln.10-20). The structure corresponding to the

controlling means is one or more of spindle controller 708 (Fig. 7), controller 726 (Fig. 7), and firmware 728 (Fig. 7) (p.11, ln.6-7). The disk drive 700 (Fig. 1) also includes means for gathering disk speed data by tracking a plurality of substantially identical disk speed features 112 (Fig. 1) defined on the optical disk 100 (Figs. 1,7) as the optical disk 100 (Figs. 1,7) is spun by the spindle motor 706 (Fig. 7), each of the disk speed features 112 (Fig. 1) spaced apart substantially equally in a first annular ring at a first radial position on the optical disk 100 (Figs. 1,7) and having an angular span that is substantially identical to an angular span of a gap between each two of the disk speed features 112 (Fig. 1) (p.12, ln.10-20; p.8, ln.6-15). The structure corresponding to the gathering means is one or more of encoder 406 (Fig. 7), encoder controller 724 (Fig. 7), controller 726 (Fig. 7), and firmware 728 (Fig. 7) (p.11, ln.22-29). The disk drive 700 (Fig. 1) further includes means for tracking, with an OPU 710 (Fig. 7), disk angular orientation data defined by disk angular orientation features 114 (Fig. 1) defined in a second annular ring at a second radial position on the optical disk 100 (Figs. 1,7), wherein the second annular ring abuts the first annular ring, and wherein the annular rings are proximate a central hub 102 (Fig. 1) of the disk 100 (Figs. 1,7) (p.12, ln.24-30; p.8, ln.16 – p.9, ln.4). The structure corresponding to the tracking means is one or more of OPU 710 (Fig. 7), OPU controller 722 (Fig. 7), controller 726 (Fig. 7), and firmware 728 (Fig. 7) (p.12, ln.28-30; p.9, ln. 9-12). The disk drive 700 (Fig. 1) additionally includes means for labeling the optical disk 100 (Figs. 1,7) according to the disk speed data and the disk angular orientation data (p.12, ln.32 – p.13, ln.6). The structure corresponding to the labeling means is one or more of OPU 710 (Fig. 7), OPU controller 722 (Fig. 7), controller 726 (Fig. 7), and firmware 728 (Fig. 7) (p.12, ln.32 – p.13, ln.6).

Dependent claim 14 recites means for passing the disk angular orientation data to the means for labeling to create an image having a desired angular orientation on a coating on the optical disk 100 (Figs. 1,7) (p.12, ln.32 – p.13, ln.6). The structure corresponding to the passing means is one or more of encoder controller 724 (Fig. 7), OPU controller 722 (Fig. 7), controller 726 (Fig. 7), and firmware 728 (p.12, ln. 32 – p.13, ln.6).

Dependent claim 17 recites means for distinguishing between a first and a second signal received from an encoder 406 (Fig. 7), wherein the first and second signals result from

differences in light reflection corresponding to the presence or absence of the disk speed features 112 (Fig. 1) (p.9, ln.24 – p.10, ln.31). The structure corresponding to the distinguishing means is one or more of encoder controller 724 (Fig. 7), controller 726 (Fig. 7), and firmware 728 (Fig. 7) (p.11, ln.22 – p.12, ln.2).

Dependent claim 18 recites means for distinguishing between a first and a second signal received from an encoder 406 (Fig. 7), wherein the first signal results when light is reflected off a mirrored surface to a sensor and the second signal results when light is reflected to the sensor by a saw tooth feature 302 (Fig. 3) that also deflects a portion of the light away from the sensor (p.9, ln.24 – p.10, ln.31). The structure corresponding to the distinguishing means is one or more of encoder controller 724 (Fig. 7), controller 726 (Fig. 7), and firmware 728 (Fig. 7) (p.11, ln.22 – p.12, ln.2).

Dependent claim 19 recites means for distinguishing between a first and a second signal received from an encoder 406 (Fig. 7), wherein the first signal results when light is reflected off a mirrored surface to a sensor and wherein the second signal results when light is reflected to the sensor by a substantially circular molded pit 502 (Figs. 5,6) that also deflects a portion of the light away from the sensor (p.9, ln.24 – p.10, ln.31). The structure corresponding to the distinguishing means is one or more of encoder controller 724 (Fig. 7), controller 726 (Fig. 7), and firmware 728 (Fig. 7) (p.11, ln.22 – p.12, ln.2).

Dependent claim 20 recites means for distinguishing between encoder 406 (Fig. 7) sensor outputs associated with levels of light reflectivity within a region defined on a mirror surface adjacent to a coating on the disk 100 (Figs. 1,7) (p.9, ln.24 – p.10, ln.31). The structure corresponding to the distinguishing means is one or more of encoder controller 724 (Fig. 7), controller 726 (Fig. 7), and firmware 728 (Fig. 7) (p.11, ln.22 – p.12, ln.2).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 2, 4, 7-8, 13, 16, 21-22, and 24-33 have been rejected under 35 USC §103(a), as being unpatentable over U.S. patent application publication 2002/0191517 by Honda et al. ("Honda") in view of U.S. patent 6,145,368 to Klein ("Klein") and further in view of U.S.

patent 5,119,363 to Satoh et al. ("Satoh").

Claims 3, 6, 9, 11-12, 14-15, 17, and 19-20 have been rejected under 35 USC §103 (a), as being unpatentable over U.S. patent application publication 2002/0191517 by Honda et al. ("Honda") in view of U.S. patent 6,145,368 to Klein ("Klein"), further in view of U.S. patent 5,119,363 to Satoh et al. ("Satoh"), and further in view of U.S. patent 5,107,107 to Osborne ("Osborne").

Claims 10 and 18 have been rejected under 35 USC §103 (a), as being unpatentable over U.S. patent application publication 2002/0191517 by Honda et al. ("Honda") in view of U.S. patent 6,145,368 to Klein ("Klein"), further in view of U.S. patent 5,119,363 to Satoh et al. ("Satoh"), further in view of U.S. patent 5,107,107 to Osborne ("Osborne"), and further in view of U.S. patent 5,670,947 to Nagashima ("Nagashima").

Claims 2, 4, 7-8, 21-22, 27-30, and 33 stand or fall together.

Claim 13, 16, and 31-32 stand or fall together.

Claims 24-25 stand or fall together.

Claim 26 stands or falls alone.

Claims 9 and 11-12 stand or fall together.

Claims 14-15 and 19-20 stand or fall together.

Claims 3 and 6 stand or fall together.

Claim 17 stands or falls alone.

Claim 10 stands or falls alone.

Claim 18 stands or falls alone.

VII. ARGUMENT

A. <u>Claims 2, 4, 7-8, 21-22, 27-30, and 33 were improperly rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. patent application publication 2002/0191517 by Honda et al. ("Honda") in view of U.S. patent 6,145,368 to Klein ("Klein") and further in view of U.S. patent 5,119,363 to Satoh et al.</u>

RECEIVED
CENTRAL FAX CENTER

AUG 0 1 2008

("Satoh").

As to a rejection under §103(a), the U.S. Patent and Trademark Office ("USPTO") has the burden under §103 to establish a *prima facie* case of obviousness by showing some objective teaching in the prior art or generally available knowledge of one of ordinary skill in the art that would lead that individual to the claimed invention. *In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988)*. The Manual of Patent Examining Procedure (MPEP) section 2143 discusses the requirements of a *prima facie* case for obviousness. That section provides as follows:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and reasonable expectation of success must be found in the prior art, and not based on applicant's disclosure.

More recently, the Supreme Court, quoting *In Re Kahn, 441 F.3d, 977, 988 (CA Fed. 2006)*, has clarified that "[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness" *KSR Int'l Co. v. Teleflex Inc., 82 USPQ2d 1385, 1396 (S.Ct. 2007)*.

Appellants contend that these claims were improperly rejected for the following reasons.

1. The cited references, in combination, do not teach or suggest all the limitations of Appellants' independent claim 21.

Independent claim 21 recites:

"21. An optical disk drive, comprising:
a spindle motor to turn an optical disk;
an OPU to apply an image to a coating within a label region of the optical disk; and
an encoder configured to track substantially identical disk speed features in a first annular ring at a first radial position on the optical disk in a region distinct from the label

region so as to thereby obtain disk speed data, the disk drive further configured to track disk angular orientation features different from the disk speed features in a second annular ring at a second radial position on the optical disk so as to thereby obtain angular orientation data, the second annular ring abutting the first annular ring, the annular rings proximate a central hub of the disk, the disk angular orientation features different from the disk speed features, and at least some of the disk angular orientation features having an overlapping angular position with at least some of the disk speed features." (emphasis added)

With regard to the proper analysis of claim limitations, it has been stated:

"In the instant application, the examiner has done little more than cite references to show that one or more elements or subcombinations thereof, when each is viewed in a vacuum, is known. The claimed invention, however, is clearly directed to a combination of elements. That is to say, appellant does not claim that he has invented one or more new elements but has presented claims to a new combination of elements. To support the conclusion that the claimed combination is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed combination or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp, 227 USPQ 972, 973 (B.P.A.I. 1985) (emphasis added).*

a) **The feature of the disk drive configured to track features in annular rings in which a second annular ring is abutting a first annular ring, and where the annular rings are proximate a central hub of the disk, is absent from the combined references, and modifies the operation of the invention.**

With regard to the annular rings of features on the optical disk that the disk drive is configured to track, the Examiner admits that the Honda reference in view of the Klein reference does not disclose the limitation "the second annular ring abutting the first annular ring", and does not assert that the Satoh reference teaches this limitation (Final Office Action, p.4). However, the Examiner argues that "shifting the position of the annular rings of Honda in view of Klein so that they abut would have been obvious to one of ordinary skill in the art at the time of the invention", based on *In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950)* (Office Action, p.4-5). Appellants disagree.

The Examiner states that In re Japikse held "that shifting the position of a part is obvious when it does not modify the operation of the invention" (Final Office Action, p.4-5). As summarized in the MPEP, "Claims to a hydraulic power press which read on the prior art

except with regard to the position of the starting switch were held unpatentable because shifting the position of the starting switch would not have modified the operation of the device" MPEP 2144.04 VI. C.

Appellants disagree with the Examiner's argument that shifting the position of the angular rings does not modify the operation of the invention. Shifting the position of the annular rings of the present invention from an abutting position to a non-abutting position would modify the operation of the present invention. More specifically, shifting the position of the angular rings of the Klein reference combined with the Honda reference from a separated position to an abutting position would modify the operation by changing the size of the continuous, uninterrupted area of the label region that the disk drive can mark on the optical disk.

In the present invention, an optical disk 100, such as a CD or DVD, has a label region 106 coated with a material writeable by an optical pick-up unit of the disk drive. "An image 108, such as text or graphics, may be applied to the label region 106 during the labeling process. The labeling process can include reading features 110, which ... provide information on disk speed ... and disk angular orientation" (Specification, para. [0022]-[0023]). It is well-known that CDs and DVDs can store large numbers of files, such as music, images, documents, and/or programs, and typically have labels that identify the particular contents. However, the surface area of optical disks is of limited size. Inherently, therefore, to provide sufficient room to be able to more fully identify the contents of the disk, it is highly desirable to maximize the continuous, uninterrupted area of the label region 106. The larger the label region 106, the more text, graphics and/or image information can be written to it. Abutting the first and second angular rings, as recited in claim 21, advantageously increases the continuous, uninterrupted area of the label region 106.

The Honda reference similarly discloses an optical disk having "a visible light characteristic changing layer" that, when exposed to a laser beam "modulated in accordance with image data such as characters or graphic images to be printed", forms "a image corresponding to the image data on the label surface" (Abstract). However, on an optical disk according to the combined Honda and Klein references in which the two annular rings are

RECEIVED
CENTRAL FAX CENTER

AUG 0 1 2008

separated, the label region would be split into different portions, and each portion would be disadvantageously smaller than if the two annular rings abutted. This disadvantagous configuration is illustrated, for example, in Fig. 2 of the Klein reference, in which one portion of the label region is between the disk hub and index channel 102, while another portion of the label region is between index channel 102 and data channel 104. If a user were to write a larger amount of text, graphics, or images than fits within one of the different portions such that the writing would span two different portions of the label region, the image quality of the writing would undesirably suffer because of the visual discontinuity in the writing that would result as a result of the gap caused by one of the channels 102, 104. For example, a photographic image that spanned two portions of the label region would have a circular line running through the middle of it.

The Examiner argues that "whether the label region has a continuous, uninterrupted area, or one discontinuous is merely an aesthetic choice"; "one person might consider a continuous label region to be prettier, and one might consider a discontinuous label region to be prettier" (Final Office Action, p.15-16). Appellants disagree. The Examiner cannot seriously be contending that printing text or an image without a visual defect such as a line running through the middle of it to mar its appearance is merely "an aesthetic choice" that "one might consider prettier" when compared to the alternative of printing the text and image clearly and cleanly.

The Examiner also argues that "the operation of the device is unchanged" because "the difference in usable area between a label region where the rings are abutting and proximate the central ring and one where they are not is marginal" (Final Office Action, p.15). Appellants disagree. The Examiner's argument goes to degree, not kind. How much the operation is modified does not bear on whether the operation is modified. In re Japikse relies only on whether the operation is modified.

The Examiner further argues that "Whether the first annular ring abuts the second annular ring makes no difference to its purpose: the speed and angular tracking works no better or worse whether the rings abut or not" (Final Office Action, p.4). The Examiner also contends that the operation of the invention is "the ability to track speed and/or angle of the

disc" (Final Office Action, p.18). Appellants disagree. The Examiner has mischaracterized the purpose and operation of the invention. The operation and purpose of the invention is to write to a label region of the optical disk which has writable material thereon in the label region (Abstract). Reading certain disk speed features when writing to the label region is part of what allows the label writing operation to be performed, and the purpose of the invention to be accomplished (Abstract).

The Examiner additionally contends that "applicant's specification, as originally filed, does not disclose any benefit or reason to have the rings abut one another. Applicant merely discloses embodiments where they abut (as per Fig. 1) and other embodiments where they do not (as per Fig. 2)" (Final Office Action, p.4). Appellants disagree. Appellants are entitled to disclose and claim different embodiments of the invention. The embodiments presently claimed are embodiments in which the annular rings abut each other. The drawings, as originally filed, disclose the benefit, as discussed above, provided by the abutting rings: maximizing the size of a continuous, uninterrupted area of the label region. It is readily apparent from examination of the specification that abutting the two annular rings, as illustrated in Fig. 1, provides a larger continuous, uninterrupted area of the label region 106 than do the separated annular rings of Fig. 2.

For these reasons, the cited references, in combination, do not teach or suggest the combination of elements recited in Appellants' claim 21, nor in its dependent claims 2, 4, 27-28, and 33. Therefore, the Examiner has failed to establish a prima facie case of obviousness at least on these grounds, and the rejection is improper at least for this reason and should be overruled.

2. The cited reference does not teach or suggest all the limitations of Appellants' independent claim 22, for similar reasons as argued for independent claim 21.

Independent claim 22 includes similar limitations to independent claim 21, and was rejected on a similar basis to claim 21 (Final Office Action, p.8). Therefore, Appellants contend that the rejection of independent claim 22, and its dependent claims 7-8 and 29-30,

should be overruled at least for the same reasons as explained heretofore for independent claim 21.

3. The Examiner utilized impermissible hindsight to combine the Honda, Klein, and Satoh references.

The present invention, as explained heretofore, recites a disk drive for applying an image to an optical disk having a label region of a material writeable by an optical pick-up unit of a disk drive as the disk is spun. Similarly the Honda reference, also as explained heretofore, teaches an optical disk having layer that, when exposed to a modulated laser beam as the optical disk is spun at a given rotating speed on a spindle in the disk drive, forms an image on the layer. Even assuming, arguendo, that the Honda reference discloses somehow tracking the disk speed and angular orientation, the Examiner admits that it does not teach that a disk drive tracks angular orientation features or has an encoder to track the disk speed features as recited in claim 21 (Final Office Action, p.2-3). The Examiner relies on the Klein reference to teach or suggest disk speed features and angular orientation features somewhat similar to those in claim 21 (Final Office Action, p.3). The Examiner then rearranges these features partly based on the Satoh reference and partly relying on In re Japikse to assert that this combination teaches or suggests all the limitations of claim 21.

a) The Klein reference is non-analogous art with respect to the invention.

The Klein reference is not in the optical disk drive art, but rather in the rotary encoder art. Furthermore, the Klein reference teaches that its rotary encoder is used in a joystick or a mouse or a wind direction indicator or a rudder position; but there is no teaching or suggestion of using the encoder, or any of its constituent components, in an optical disk drive (Abstract; col. 3, ln. 28-35). To be usable with such devices as a joystick or mouse, the rotatable disk in the rotary encoder is necessarily much smaller in size than an optical disk. In addition, unlike an optical disk which is repetitively rotated at a certain speed during label writing in a disk drive in order to position the optical pick-up unit of the disk drive adjacent to all the locations on the optical disk that are to be labeled, the rotary encoder of the Klein reference is designed for applications in which "[t]urning the rotary encoder through a

complete revolution may not be possible or may be inconvenient" (col. 2, ln. 13-15). Furthermore, the disk used in the rotary encoder of the Klein reference bears little physical or structural resemblance, other than being circular and flat, to the optical disk of the present invention. "Rotatable disk 100 is typically composed of glass, and the openings which form index channel 102 and data channel 104 are typically etched in rotatable disk 100" (Klein, col. 1, ln. 56-59; emphasis added). An optical disk is not typically composed of glass, nor are its markings in the form of openings.

To be properly used as a prior art reference, a reference must be either in the field of the inventors' endeavor or reasonably pertinent to the specific problem with which the inventor was involved. *In re Deminski, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986).* Based on at least the abovementioned differences, Appellants contend that the Klein reference is not in an art analogous to that of the invention. In addition, Appellants contend that the Klein reference is not reasonably pertinent to the problem with which the inventor was involved. As explained heretofore, the problem with which Appellants were involved was writing to a label region of the optical disk which has writable material thereon in the label region (Abstract). The problem with which Klein was involved was determining a particular angle of orientation at which a device such as a joystick or a mouse or a wind direction indicator or a rudder is positioned. "If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem ... [I]f it is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it." *In re Clay, 996 F.2d, 656, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992).* Thus Appellants contend that the Klein reference is non-analogous art and would not have been considered.

b) Because the Examiner has not provided any evidence that resolves or specifically defines the level of ordinary skill in the pertinent art, any assertion as to what would be obvious to a person having ordinary skill in the art is improper.

Furthermore, the Examiner's contention that "[i]t would have been obvious to one of

ordinary skill in the art at the time of the invention to include in Honda" certain cherry-picked features of the rotatable disk of the Klein reference, even if the Klein reference may be, arguendo, analogous art, is conclusory and improper (Final Office Action, p.3-4). The Examiner has not provided any evidence that resolves or specifically defines the level of ordinary skill in the pertinent art, and thus such a statement is not sufficient to establish a prima facie case of obviousness. "[T]he [Graham v. Deere] factors continue to define the inquiry that controls" *KSR Int'l Co. v. Teleflex Inc., 82 USPQ2d 1385, 1387 (S.Ct. 2007)*. Only after the person of ordinary skill has been defined may a determination be made as to whether that person would have been familiar with the relevant references, and that the combined and modified teachings of the references as a whole would render Appellants invention obvious.

Here, Appellants contend that the cobbling together, in jigsaw puzzle fashion, by the Examiner of a variety of features, or portions, of elements taken from one reference or another, and then deeming Appellants claim 21 obvious in light of the completed jigsaw puzzle, after a little further rearrangement under In re Japikse, is doing nothing more than applying impermissible hindsight to reconstruct Appellants' invention. For example, in responding to Appellants' previous arguments about features in the Satoh reference that teach away from the combination, the Examiner responds that "since Satoh was only relied upon to teach positioning an annular ring proximate the central hub of the disc, ... none of the details of Satoh that Applicant argues about have anything to do with the combination used to reject the claims" (Final Office Action, p.17). Such an argument demonstrates how hindsight riddles the rejections.

For at least these reasons, the Examiner has failed to establish a prima facie case of obviousness and the rejection should be overruled.

4. The Honda, Klein, and Satoh references are not properly combinable in that the combination would result in an inoperative device, and thus the references teach away from the combination.

While the Examiner relies on the Satoh reference to teach positioning a single annular ring proximate the hub, the single annular ring of the Satoh reference does not read on the

two separate annular rings, one of disk speed features and the other of disk angular orientation features, recited in claim 21. The Examiner identifies data channel ring 104 and index channel ring 102 of the Klein reference as corresponding to these features (Final Office Action, p.3). Thus, it is the rings 104, 102 of the Klein reference that the Examiner is rearranging to be proximate the central hub of the disk.

However, in doing so, the Klein reference would be rendered inoperative by this modification. The rotatable disk 100 of the rotary encoder of the Klein reference, used in a mouse 310 or a joystick 320, is necessarily much smaller in diameter than a CD or a DVD disk. Thus the rings of the data channel 104 and the index channel 102 of the Klein reference are positioned near the outer edge, not the inner hub, of the disk 100 in order to provide sufficient resolution and accuracy of the angular position measurements. The data channel 104 has "a large number of openings (pulses) specifying incremental angular displacements of disk 100" (col. 1, lines 53-55). If the ring of data channel 104 were to be placed closer to the hub, where the circumference of the ring would be smaller, the number of openings in the ring would be reduced. A fewer number of openings in the 360 degree span of the disk would disadvantageously diminish the resolution and accuracy of angular position measurements. As a result, the Klein encoder would be rendered inoperative by this modification for its intended purpose of providing accurate angular position information for a mouse, joystick, or similar devices. The reduced resolution and accuracy of the mouse/joystick would result in "jumpy" movement of the cursor on the computer screen which would be unacceptable to users, and could even prevent the cursor from being placed at desired graphical locations on the computer screen. In addition, one skilled in the art would not be motivated to substitute a disk the size of a CD or DVD of the Honda or Satoh references for the rotatable disk 100 of the Klein reference, as this would make the Klein mouse or joystick unacceptably large in size.

The Examiner contends that, "in the combination relied upon, the rings of Klein have been added to the optical disc of Honda. Since the optical disc of Honda is a CD or DVD, and therefore larger than the original disc taught by Klein alone, positioning the rings on the inner hub would not cause a detrimental affect" (Final Office Action, p.17). The Examiner

again selectively chooses, apparently based solely on Appellants' claims, which features of the Klein reference he will consider. This is improper, for the reasons explained above.

Furthermore, it is necessary to consider what a reference would teach or suggest to a person having ordinary skill in the art. It has been held that,

"If references taken in combination would produce a 'seemingly inoperative device', we have held that such references teach away from the combination and thus cannot serve as predicates for a prima facie case of obviousness" *McGinley v. Franklin Sports Inc., 60 USPQ2d 1001, 101 (Fed. Cir. 2001)*.

Thus because, as explained above, the Klein reference would be rendered inoperative by the suggested modification of placing the rings 104, 102 proximate the central hub of the mouse or joystick as in the Satoh reference, the Klein reference teaches away from the combination, and cannot serve as a predicate for establishing a prima facie case of obviousness.

The Examiner further contends that "even if the resolution and accuracy were reduced, the combination would still function – it wouldn't be inoperative" (Final Office Action, p.17). It is difficult to see how this is true. One would not want a rudder position indicator with reduced resolution and accuracy, for example, as a sailor could end up miles off-course with possible danger to life and limb. But regardless, even if, arguendo, the combination would still function, it clearly would not be desirable. "Trade-offs often concern what is feasible, not what is, on balance, desirable. Motivation to combine requires the latter" *Winner Int'l Royalty Corp. v. Wang, 53 USPQ2d 1580, 1587*. For this reason, a rotary encoder with reduced resolution and accuracy would not be desirable in the applications for the rotary encoder that are disclosed in the Klein reference, and proper motivation to combine the references is absent.

The combination of the Honda, Klein, and Satoh references would result in an inoperative device and thus teach away from the modification or combination for at least another reason as well. In the Satoh reference, the track region 7 (Fig. 2) of the optical disk to which data can be written has "groove-like guide tracks" (col. 4, line 15). Recording of data on the optical disk is accomplished by applying "a tiny spot of laser light beam, which is focused so that the diameter is less than 1 micrometer" on a desired location of the optical disk (col. 1, lines

12-15). The positioning of the optical head 28 (Fig. 5) relative to the optical disk 1 is accomplished by a tracking control that "is effected so as to follow the zigzag motion caused by the eccentricity of the guide tracks with the above-mentioned tiny spot focused on the groove-like track" (col. 1, lines 36-39). For example, "[t]he movement of the optical head 28 is performed with the tracking control of the optical head switched off, by counting the number of crossing tracks represented by a track crossing signal of a tracking error signal by means of a crossing track number counter 38" (col. 7, lines 43-48). Once the optical head is position such that it "faces the writing track, tracking control is effected" and "a laser light beam is applied to the optical disk 1 for effecting writing and reading" (col. 7, line 58 – col. 8, line 2).

During the above operations, the optical disk is positioned according to the Satoh reference in such a manner that the groove-like tracks are detectable by the optical disk drive. When the optical disk 10 (Fig. 1) of the Honda reference is positioned for data recording with the substrate 12 adjacent the optical pickup of the disk drive, any grooves would be visible through the substrate 12, as is required for data read or write operations. However, when the optical disk drive of the Honda reference operates to record visible markings on the optical disk 10, the optical disk is inverted in the disk drive such that the label surface side 22 is adjacent the optical pickup to form visible marks in the labeling layer 18. In this configuration, the grooves would not be visible from the label surface side 22; reflective layer 16 would block visibility of the grooves. Without the ability to count and track the groove-like guide tracks in this orientation, the disk drive would not operate. Also for this reason, the Satoh reference teaches away from combination with the Honda reference.

Thus because, as explained above, the modified disk drive would be rendered inoperative when writing visible markings on the optical disk, the Satoh reference teaches away from the combination and cannot serve as a predicate for a prima facie case of obviousness.

The Examiner dismisses the above argument with the assertion that "none of the details of Satoh that Applicant argues about have anything to do with the combination used to reject the claims" (Final Office Action, p.17). Appellants respond that this argument further demonstrates how hindsight riddles the rejections.

For at least these reasons, the Examiner has failed to establish a prima facie case of obviousness and the rejection should be overruled.

B. Claims 13, 16, and 31-32 were improperly rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. patent application publication 2002/0191517 by Honda et al. ("Honda") in view of U.S. patent 6,145,368 to Klein ("Klein") and further in view of U.S. patent 5,119,363 to Satoh et al. ("Satoh").

1. The cited references, in combination, do not teach or suggest all the limitations of Appellants' independent claim 13.

Independent claim 13 recites:

"13. An optical disk drive, comprising:
means for controlling a rate at which a spindle motor spins an optical disk;
means for gathering disk speed data by tracking a plurality of substantially identical disk speed features defined on the optical disk as the optical disk is spun by the spindle motor, each of the disk speed features spaced apart substantially equally in a first annular ring at a first radial position on the optical disk and having an angular span that is substantially identical to an angular span of a gap between each two of the disk speed features;
means for tracking, with an OPU, disk angular orientation data defined by disk angular orientation features defined in a second annular ring at a second radial position on the optical disk, wherein the second annular ring abuts the first annular ring, and wherein the annular rings are proximate a central hub of the disk; and
means for labeling the optical disk according to the disk speed data and the disk angular orientation data." (emphasis added)

a) The tracking means of the disk drive for tracking features in annular rings in which a second annular ring abuts a first annular ring, and where the annular rings are proximate a central hub of the disk, is absent from the combined references, and modifies the operation of the invention.

For similar reasons as explained heretofore with reference to claim 21, Appellants contend that the cited references, in combination, do not teach or suggest the combination of elements recited in Appellants' claim 13, nor in its dependent claims 31-32. Therefore, the Examiner has failed to establish a prima facie case of obviousness at least on these grounds,

and the rejection is improper at least for this reason and should be overruled.

b) Tracking means of the disk drive for tracking disk angular orientation features with an OPU is absent from the combined references.

In rejected claim 13, the Examiner contends that "[a]ll elements positively recited have already been identified with respect to earlier claims. No further elaboration is necessary" (Final Office Action, p.9).

Appellants disagree. Claim 13 recites means for tracking, with an OPU, disk angular orientation data defined by disk angular orientation features defined in a second annular ring. Tracking means with an OPU are not recited in any earlier claim. Nor do the cited references in combination teach or suggest this feature, as admitted by the Examiner with regard to the rejection of claim 3.

For at least these reasons, the Examiner has failed to establish a prima facie case of obviousness and the rejection should be overruled.

2. The Examiner utilizes impermissible hindsight to combine the Honda, Klein, and Satoh references.

For similar reasons as explained heretofore with reference to claim 21, Appellants contend that the Examiner utilizes impermissible hindsight to combine the Honda, Klein, and Satoh references. For at least these reasons, the Examiner has failed to establish a prima facie case of obviousness and the rejection should be overruled.

3. The Honda, Klein, and Satoh references are not properly combinable in that the combination would result in an inoperative device, and thus the references teach away from the combination.

For similar reasons as explained heretofore with reference to claim 21, Appellants contend that the combination of the Honda, Klein, and Satoh references would result in an inoperative device, and thus the references teach away from the combination. For at least these reasons, the Examiner has failed to establish a prima facie case of obviousness and the

rejection should be overruled.

C. Claims 24-25 were improperly rejected under 35 U.S.C. §103(a), as being unpatentable over U.S. patent application publication 2002/0191517 by Honda et al. ("Honda") in view of U.S. patent 6,145,368 to Klein ("Klein") and further in view of U.S. patent 5,119,363 to Satoh et al. ("Satoh").

1. The rejection of dependent claim 24 is improper for the same reasons that render the rejection of its base claim 21 improper.

"A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." (35 U.S.C. §112, paragraph 4.) "If an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending from that claim is also nonobvious." *In re Fine, 837 F.2d 1071 (Fed. Cir. 1988).*

Claim 24 depends from base claim 21, which was rejected under 35 U.S.C. 103(a) based on the Honda, Klein, and Satoh references. Appellants have argued heretofore the reasons why the rejection of base claim 21 is improper. Because the rejection of base claim 21 is improper, the rejection of dependent claim 24 is also improper for at least the same reasons.

2. The cited references, alone or in combination, do not teach or suggest all the limitations of Appellants' dependent claim 24.

Dependent claim 24 recites:

"24. The optical disk drive of claim 21, wherein the first radial position is nearer the central hub of the disk than the second radial position." (emphasis added)

The first annular ring of disk speed features is located at the first radial position, while the second annular ring of disk angular orientation features is located at the second radial position. Thus, claim 24 specifies that the ring of disk speed features is inside the ring of disk angular orientation features.

a) The feature that a first radial position (for the ring of disk speed features) is

nearer the central hub of the disk than a second radial position (for the ring of disk angular orientation features) is absent from the combined references, and modifies the operation of the invention.

The Examiner admits that Honda in view of Klein, and further in view of Satoh, does not disclose this feature (Final Office Action, p.6). In particular, the Klein reference teaches just the opposite: that the ring of disk speed features (i.e. data channel 104) is outside the ring of angular orientation features (i.e. index channel 102) (Fig. 2). However, the Examiner argues that it would have been obvious to reverse the position of the rings of the Klein references, based on In re Japikse, because "|w|hich of the two annular rings is closer to the central hub of the disk makes no difference to its purpose: the speed and angular tracking work no better or worse no matter which ring is inside or outside" (Final Office Action, p.6).

Appellants disagree with the Examiner's argument that shifting the position of the angular rings does not modify the operation of the invention. Reversing the position of the annular rings of the present invention so that the ring of disk speed features is nearer the central hub than the ring of disk angular orientation features would modify the operation of the present invention. More specifically, this change would modify the operation by changing which elements of the disk drive read the disk speed and disk angular orientation tracking features.

As understood with reference to Figs. 1 and 7, Appellants' specification discloses that the label region 106 of optical disk 100 is writeable by the optical pick-up unit (OPU) 710 (para. [0022]). However, the OPU 710 can only be operated within a certain radial range, which includes a minimum radial distance from the hub (para. [0035]). To read any disk features that are placed closer to the hub than the OPU 710 can read, the encoder 406 is used (para. [0035]). Furthermore, the encoder 406 always is used to read the disk speed features 112 (para. [0038]). However, either the OPU 710 or the encoder 406 may be used to read the disk angular orientation features 114.

Thus, placing the disk speed features in the inner ring, positioning the disk speed features on the disk sufficiently close to the hub such that the encoder 406 can read them, and abutting the disk angular orientation features in the outer ring allows the encoder 406 to read

the disk speed features, and allows the OPU to read the disk angular orientation features which are positioned on the disk at the minimum radial distance from the hub at which the OPU can be operated. This is the configuration recited in the claim.

However, if the configuration taught by the Klein reference were to be used, where the disk angular orientation features were nearer the central hub of the disk than the disk speed features, it would be necessary for the encoder 406 to read both the disk angular orientation features, as well as the disk speed features, because the OPU could not be operated at that radial distance from the hub (para. [0025], [0037]). In this way, the operation of the invention would be modified significantly.

The Examiner argues that the "specification, as originally filed, does not disclose any benefit or reason to have one ring inside the other" (Final Office Action, p.6). Appellants disagree, as the benefits and reasons have just been described with reference to the specification.

The Examiner also argues that "[i]n this case there are only two possibilities: the first radial position is inside the second, or the second radial position is inside the first. With only two combinations, both solutions would have been obvious ... and one of ordinary skill could have pursued the solution wherein one ring is inside the other with a reasonable expectation of success" (Final Office Action, p.7). Appellants believe that such an argument is colored by impermissible hindsight, with the Examiner already knowing from Appellants' claim what configuration he wants to achieve. Instead, once it has been acknowledged that the cited references in combination do not teach or suggest all the features of the claims without some further modifications, it should be recognized that there are many more than two possible alternatives for speed and angular orientation features. For example, it might be possible in other implementations to provide one ring of combined features, or more than two rings of features. The rings may be only partial rings, not complete rings. The disk speed features might not be substantially identical, or might not be readable when writing the label region. The disk angular orientation features might not have an overlapping angular position with the disk speed features, and the rings might not be proximate the hub of the disk. Many other modifications or combinations of modifications are also possible. Thus it is incorrect for the

Examiner to assert that there are only two possible alternatives. With such a large number of possible alternatives, there is no reasonable expectation of success by one of ordinary skill in the art – assuming that the skill level of such a person were to have been properly defined, which, here it has not been.

For these reasons, the cited references, in combination, do not teach or suggest the combination of elements recited in Appellants' claim 24. Therefore, the Examiner has failed to establish a prima facie case of obviousness at least on these grounds, and the rejection is improper at least for this reason and should be overruled.

3. The cited reference does not teach or suggest all the limitations of Appellants' dependent claim 25, for similar reasons as argued for dependent claim 24.

Dependent claim 25 includes similar limitations to dependent claim 24, and was rejected on a similar basis to claim 24 (Final Office Action, p.8). Therefore, Appellants contend that the rejection of dependent claim 25 should be overruled at least for the same reasons as explained heretofore for dependent claim 24.

D. Claim 26 was improperly rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. patent application publication 2002/0191517 by Honda et al. ("Honda") in view of U.S. patent 6,145,368 to Klein ("Klein") and further in view of U.S. patent 5,119,363 to Satoh et al. ("Satoh").

1. The rejection of dependent claim 26 is improper for the same reasons that render the rejection of its base claim 13 improper.

Claim 26 depends from base claim 13, which was rejected under 35 U.S.C. 103(a) based on the Honda, Klein, and Satoh references. Appellants have argued heretofore the reasons why the rejection of base claim 13 is improper. Because the rejection of base claim 13 is improper, the rejection of dependent claim 26 is also improper for at least the same reasons and should be overruled.

2. The cited references, alone or in combination, do not teach or suggest all the limitations of Appellants' dependent claim 26.

Dependent claim 26 recites:

"26. The optical disk drive of claim 13, wherein the first annular ring is nearer the central hub of the disk than the second annular ring." (emphasis added)

For similar reasons as explained heretofore with reference to claim 24, Appellants contend that the cited references do not teach or suggest all the limitations of dependent claim 26. Therefore, Appellants contend that the rejection of dependent claim 26 should be overruled at least for the same reasons as explained heretofore for dependent claim 24.

E. Claims 9 and 11-12 were improperly rejected under 35 U.S.C. §103(a), as being unpatentable over U.S. patent application publication 2002/0191517 by Honda et al. ("Honda") in view of U.S. patent 6,145,368 to Klein ("Klein"), further in view of U.S. patent 5,119,363 to Satoh et al. ("Satoh"), and further in view of U.S. patent 5,107,107 to Osborne ("Osborne").

1. The rejection of dependent claims 9 and 11-12 is improper for the same reasons that render the rejection of their base claim 22 improper.

Claims 9 and 11-12 depend from base claim 22, which was rejected under 35 U.S.C. 103(a) based on the Honda, Klein, and Satoh references. Appellants have argued heretofore the reasons why the rejection of base claim 22 is improper. Because the rejection of base claim 22 is improper, the rejection of dependent claims 9 and 11-12 is also improper for at least the same reasons.

F. **Claims 14-15 and 19-20 were improperly rejected under 35 U.S.C. §103(a), as being unpatentable over U.S. patent application publication 2002/0191517 by Honda et al. ("Honda") in view of U.S. patent 6,145,368 to Klein ("Klein"), further in view of U.S. patent 5,119,363 to Satoh et al. ("Satoh"), and further in view of U.S. patent 5,107,107 to Osborne ("Osborne").**

1. The rejection of dependent claims 14-15 and 19-20 is improper for the same reasons that render the rejection of their base claim 13 improper.

Claims 14-15 and 19-20 depend from base claim 13, which was rejected under 35 U.S.C. 103(a) based on the Honda, Klein, and Satoh references. Appellants have argued heretofore the reasons why the rejection of base claim 13 is improper. Because the rejection of base claim 13 is improper, the rejection of dependent claims 14-15 and 19-20 is also improper for at least the same reasons.

G. **Claims 3 and 6 were improperly rejected under 35 U.S.C. §103(a), as being unpatentable over U.S. patent application publication 2002/0191517 by Honda et al. ("Honda") in view of U.S. patent 6,145,368 to Klein ("Klein"), further in view of U.S. patent 5,119,363 to Satoh et al. ("Satoh"), and further in view of U.S. patent 5,107,107 to Osborne ("Osborne").**

1. The rejection of dependent claims 3 and 6 is improper for the same reasons that render the rejection of their respective base claims 21 and 22 improper.

Claims 3 and 6 depend from base claims 21-22 respectively, which were rejected under 35 U.S.C. 103(a) based on the Honda, Klein, and Satoh references. Appellants have argued heretofore the reasons why the rejection of base claims 21-22 is improper. Because the rejection of base claims 21-22 is improper, the rejection of dependent claims 3 and 6 is also improper for at least the same reasons.

2. The cited references, alone or in combination, do not teach or suggest all

the limitations of Appellants' dependent claim 3.

Dependent claim 3 recites:

"3. The optical disk drive of claim 21, wherein the OPU is additionally configured to track the disk angular orientation features, the disk angular orientation features defined within the label region." (emphasis added)

a) The feature wherein the OPU is configured to track the disk angular orientation features, while the encoder is configured to track the disk speed features, is absent from the combined references.

Dependent claim 3 recites that the OPU is configured to track the disk angular orientation features, while its base claim 21 recites that the encoder is configured to track the disk speed features. With regard to these features, the Examiner contends that "Osborne discloses that an encoder may still be used with this scheme, but that the light source of an optical disk drive (an OPU) is superior (column 11, lines 25-60) ... The motivation would be to use the OPU to track the disk angular orientation features instead of a conventional encoder. Osborne discloses that using an OPU overcomes the weaknesses of a conventional encoder" (Final Office Action, p.9-10). Appellants disagree.

The Osborne reference discloses an angular position encoder (Abstract). Within the angular position encoder,

"[t]he device adapts features prevalent in optical disk technology toward the application of angular position sensing. A reflective disk and the principles of interferometry are employed. The servo controlled steering optics move so as to acquire a track on the disk lying at a predetermined radius and distance below the head, and then adjust position and orientation in order to maintain view of the disk track as required. Thus, the device is actively self-aligning." (Abstract).

The Osborne reference fails to remedy any deficiencies of the Honda, Klein, and Satoh references. Claim 3, read in conjunction with its base claim 21, recites that the first ring (of disk speed features) is tracked by an encoder, while the second ring (of disk angular orientation features) is tracked by an OPU. However, the Osborne reference teaches an encoder that uses optical disk technology. Thus the Osborne reference teaches or suggests, at most, that both the disk speed features and the disk angular orientation features are tracked with encoders. This is the opposite of tracking the disk angular orientation features with the

OPU, as required by claim 3.

Furthermore, one of the distinctions between the use of an encoder and the use of an OPU in the present invention is that, while the encoder can be dedicated to reading the disk speed features in the first ring, base claim 21 recites that the OPU is also used to apply an image to a coating in the label region of the optical disk. In order to mark the writeable material, the OPU must necessarily stop reading the ring of disk angular orientation features in order for the laser beam to apply energy to make the marks. However, the Osborne reference teaches that the encoder is actively self-aligning and that the optical head maintains its view of the track on the disk (Abstract). If the optical head were to move its position away from the track of disk angular orientation features on the disk in order to apply the image to the coating in the label region, it could not maintain its view of the track and would not be actively self-aligning.

In addition, there is no basis for the Examiner's assertion that Osborne discloses that an encoder may still be used. The cited portion of the Osborne reference has one section titled "Comparing the Two Technologies" of a conventional optical encoder and an optical disk drive. This section teaches that, unlike high resolution conventional encoders, optical disk drives do not "rely on clean assembly at the manufacturer's facility" or "employ dust covers and seals to prevent contamination" or "have optical paths" that "are easily blocked by small particles", as conventional encoders (col. 11, ln. 25-52). The cited portion of the Osborne reference also has a second section titled "Description of Invention" that teaches that by adapting "the advantages of optical disk technology toward the problem of shaft orientation sensing ... the weaknesses of the convention optical encoder are overcome" (col. 11, ln. 55-58). A fair reading of the cited portion fails to reveal any teaching or suggestion that a conventional encoder should still be used, given all the asserted disadvantages of conventional encoders and the asserted advantages of optical disk technology. More specifically, furthermore, there is no teaching or suggestion in the Osborne reference, or the combination of cited references, that an encoder tracks the disk speed features in one ring of an optical disk, while an OPU tracks the disk angular orientation features in another ring of the optical disk.

For these reasons, the cited references, in combination, do not teach or suggest the combination of elements recited in Appellants' claim 3. Therefore, the Examiner has failed to establish a prima facie case of obviousness at least on these grounds, and the rejection is improper at least for this reason and should be overruled.

3. The cited references, alone or in combination, do not teach or suggest all the limitations of Appellants' dependent claim 6, for similar reasons as argued for dependent claim 3.

Dependent claim 6 includes similar limitations to dependent claim 3, and was rejected on a similar basis to claim 3 (Final Office Action, p.10). Therefore, Appellants contend that the rejection of dependent claim 6 is improper and should be overruled at least for the same reasons as explained heretofore for dependent claim 3.

4. The Honda, Klein, Satoh, and Osborne references are not properly combinable in that there is no articulated reason with some rational underpinning to modify or combine the reference teachings because the reason articulated by the Examiner is nothing more than a list of features recited in claims 3 and 6.

In order to establish a *prima facie* case of obviousness, there must be an articulated reason with some rational underpinning that would have prompted a person of ordinary skill in the relevant field to combine the prior art elements in the manner claimed. *In Re Kahn, 441 F.3d, 977, 988 (CA Fed. 2006).* A patent composed of several elements is not proved obvious merely by demonstrating that each element was, independently, known in the prior art.

As the articulated reason, the Examiner states that

"The motivation would be to use the OPU to track the disk angular orientation features instead of a conventional encoder. Osborne discloses that using an OPU overcomes the weaknesses of a conventional encoder." (Final Office Action, p.10)

The Examiner articulates this reasoning as the rationale for tracking the second ring of disk angular orientation features with an OPU. However, the articulated reason is nothing more than a listing of the features recited by claims 3 and 6. A mere listing of the features

themselves cannot be the reason for choosing that particular combination of features. This circular logic lacks the rationale underpinning required to support combining or modifying the references.

In addition, this is further evidence of the Examiner's impermissible use of hindsight in selectively applying the optical disk technology of the Osborne reference only to one aspect of the claimed invention (i.e. tracking the disk angular orientation features) but not to another aspect of the claimed invention (i.e. tracking the disk speed features). Appellants contend that the Examiner is using the claim language itself as a blueprint for piecing the references together.

For at least these reasons, the Examiner has failed to establish a prima facie case of obviousness and the rejection should be overruled.

5. The Honda, Klein, Satoh, and Osborne references are not properly combinable in that the Osborne reference teaches away from the combination of features recited in claims 3 and 6.

The limitations of claim 3 and 6, read with their base claims 21 and 22, recite that one of the rings - the first ring having the disk speed features - is read by an encoder. Assuming arguendo that the Examiner is correct that the Osborne reference teaches that an OPU overcomes weaknesses of a conventional encoder in reading the annular rings, the Osborne reference teaches away from using an encoder to read any of the rings. In light of these asserted advantages, it is difficult to see how the Osborne reference would teach or suggest reading the features of one of the rings with an OPU, while reading the features of an abutting ring with an encoder instead.

For at least these reasons, the Examiner has failed to establish a prima facie case of obviousness and the rejection should be overruled.

6. There would be no reasonable expectation of success in combining the Honda, Klein, Satoh, and Osborne references in that the OPU would be inoperative either to read the second annular ring of features on the optical disk or to mark the writeable material in the label region of the

optical disk

In order to be actively self-aligning with the ring of features as taught by the Osborne reference, the Osborne reference requires that the optical head maintains its view of the track on the disk (Abstract). Because of this, for example,

"there is no need for the heads to be carriage mounted as they are in a ... optical disk drive. The disk employs concentric rather than spiral tracks and each head is only required to acquire a track within the narrow range defined by the guard bands. The fine track actuator in an optical read head is capable of covering a range of 0.7 mm (0.027"). At initial assembly it should not be difficult to align the disk relative to the head such that the track, or tracks, of interest fall within this range. In this application there is no platter drive mechanism to be concerned with either." (col. 14, ln. 63 – col. 15, ln. 5)

If the optical head is not carriage mounted, it cannot be moved to the span of locations of the writeable material in the label region of the optical disk, and thus no markings could be formed.

Even if the optical head were to be carriage mounted so at to move to locations in this span, the OPU would necessarily have to stop reading the ring in order for the laser beam to be positioned in the label region to apply energy to make the marks in the writeable material. However, the Osborne reference teaches that the encoder is actively self-aligning and that head maintains its view of the track on the disk (Abstract). If the head were to move its position in order to perform some other operation, it could not maintain its view of the track, and would not be actively self-aligning.

For at least these reasons, the Examiner has failed to establish a prima facie case of obviousness and the rejection should be overruled.

H. Claim 17 was improperly rejected under 35 U.S.C. §103(a), as being unpatentable over U.S. patent application publication 2002/0191517 by Honda et al. ("Honda") in view of U.S. patent 6,145,368 to Klein ("Klein"), further in view of U.S. patent 5,119,363 to Satoh et al. ("Satoh"), and further in view of U.S. patent 5,107,107 to Osborne ("Osborne").

1. The rejection of dependent claim 17 is improper for the same reasons that

render the rejection of its base claim 13 improper.

Claim 17 depends from base claim 13, which was rejected under 35 U.S.C. 103(a) based on the Honda, Klein, and Satoh references. Appellants have argued heretofore the reasons why the rejection of base claim 13 is improper. Because the rejection of base claim 13 is improper, the rejection of dependent claim 17 is also improper for at least the same reasons and should be overruled.

2. The cited references, alone or in combination, do not teach or suggest all the limitations of Appellants' dependent claim 17.

Dependent claim 17 recites:

"17. The optical disk drive of claim 13, wherein the means for gathering disk speed data comprises:

means for distinguishing between a first and a second signal received from an encoder, wherein the first and second signals result from differences in light reflection corresponding to the presence or absence of the disk speed features." (emphasis added)

While claim 17 recites signals received from an encoder, its base claim 13 recites means for tracking, with an OPU, disk angular orientation data defined by disk angular orientation features defined in a second annular ring. With regard to claim 17, the Examiner contends that "[a]ll elements positively recited have already been identified with respect to earlier rejections. No further elaboration is necessary" (Final Office Action, p.13). Therefore, for similar reasons as explained heretofore with reference to claim 3, Appellants contend that the cited references do not teach or suggest all the limitations of dependent claim 17. Accordingly, Appellants contend that the rejection of dependent claim 17 should be overruled at least for the same reasons as explained heretofore for dependent claim 3.

3. The Honda, Klein, Satoh, and Osborne references are not properly combinable in that there is no articulated reason with some rational underpinning to modify or combine the reference teachings because the reason articulated by the Examiner is nothing more than a list of features recited in claims 3 and 6.

For similar reasons as explained heretofore with reference to claim 3, Appellants

contend that the cited references are not properly combinable because the articulated reason provided by the Examiner lacks the necessary rational underpinning. For at least these reasons, the Examiner has failed to establish a prima facie case of obviousness and the rejection should be overruled.

4. The Honda, Klein, Satoh, and Osborne references are not properly combinable in that the Osborne reference teaches away from the combination of features recited in claims 3 and 6.

For similar reasons as explained heretofore with reference to claim 3, Appellants contend that the Osborne reference teaches away from combination with the Honda, Klein, and Satoh references. For at least these reasons, the Examiner has failed to establish a prima facie case of obviousness and the rejection should be overruled.

5. There would be no reasonable expectation of success in combining the Honda, Klein, Satoh, and Osborne references in that the OPU would be inoperative either to read the second annular ring of features on the optical disk or to mark the writeable material in the label region of the optical disk

For similar reasons as explained heretofore with reference to claim 3, Appellants contend that the combination of the Honda, Klein, Satoh, and Osborne references would result in an inoperative device, and thus the references teach away from the combination. For at least these reasons, the Examiner has failed to establish a prima facie case of obviousness and the rejection should be overruled.

I. **Claim 10 was improperly rejected under 35 U.S.C. §103(a), as being unpatentable over U.S. patent application publication 2002/0191517 by Honda et al. ("Honda") in view of U.S. patent 6,145,368 to Klein ("Klein"), further in view of U.S. patent 5,119,363 to Satoh et al. ("Satoh"), in view of U.S. patent 5,107,107 to Osborne ("Osborne"), and further in view of U.S. patent 5,670,947 to Nagashima ("Nagashima").**

1. The rejection of dependent claim 10 is improper for the same reasons that render the rejection of its base claim 22 improper.

Claim 10 depends from base claim 22, which was rejected under 35 U.S.C. 103(a) based on the Honda, Klein, and Satoh references. Appellants have argued heretofore the reasons why the rejection of base claim 22 is improper. Because the rejection of base claim 22 is improper, the rejection of dependent claim 10 is also improper for at least the same reasons.

J. **Claim 18 was improperly rejected under 35 U.S.C. §103(a), as being unpatentable over U.S. patent application publication 2002/0191517 by Honda et al. ("Honda") in view of U.S. patent 6,145,368 to Klein ("Klein"), further in view of U.S. patent 5,119,363 to Satoh et al. ("Satoh"), in view of U.S. patent 5,107,107 to Osborne ("Osborne"), and further in view of U.S. patent 5,670,947 to Nagashima ("Nagashima").**

1. The rejection of dependent claim 18 is improper for the same reasons that render the rejection of its base claim 13 improper.

Claim 18 depends from base claim 13, which was rejected under 35 U.S.C. 103(a) based on the Honda, Klein, and Satoh references. Appellants have argued heretofore the reasons why the rejection of base claim 13 is improper. Because the rejection of base claim 13 is improper, the rejection of dependent claim 18 is also improper for at least the same reasons.

VIII. CONCLUSION

Appellants contend that claims 2-4, 6-22, and 24-33 were improperly rejected because the applied references, alone or in combination, do not teach or suggest all of Appellants' claim limitations, there is no articulated reason with some rational underpinning to modify or combine reference teachings, impermissible hindsight is used to combine or modify the references, one or more of the references teach away from the combination, and/or there is no reasonable expectation of success in combining the references.

Each of these reasons alone distinguishes Appellants' claims from the cited references and makes Appellants' claims non-obvious in light of the cited references.

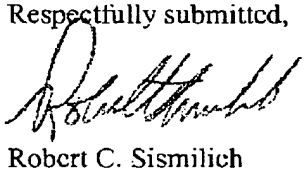
Overruling of the Examiner's rejections of claims 2-4, 6-22, and 24-33 is respectfully requested.

AUTHORIZATION TO PAY AND PETITION

FOR THE ACCEPTANCE OF ANY NECESSARY FEES

If any charges or fees must be paid in connection with the foregoing communication (including but not limited to the payment of an extension fee or issue fees), or if any overpayment is to be refunded in connection with the above-identified application, any such charges or fees, or any such overpayment, may be respectively paid out of, or into, the Deposit Account No. 08-2025 of Hewlett-Packard Company. If any such payment also requires Petition or Extension Request, please construe this authorization to pay as the necessary Petition or Request which is required to accompany the payment.

Respectfully submitted,



Robert C. Sismilich
Reg. No. 41,314
Attorney for Appellant(s)
Telephone: (941) 677-6015

Date: 8/1/08

Hewlett-Packard Company
Intellectual Property Administration
P. O. Box 272400
Fort Collins, CO 80527-2400

IX. CLAIMS APPENDIX

2. The optical disk drive of claim 21, wherein the encoder is additionally configured to track the disk angular orientation features, the disk angular orientation features molded within the region distinct from the label region.

3. The optical disk drive of claim 21, wherein the OPU is additionally configured to track the disk angular orientation features, the disk angular orientation features defined within the label region.

4. The optical disk drive of claim 21, additionally comprising a control procedure to coordinate disk speed data from the encoder with the OPU during application of the image.

6. A processor-readable medium as recited in claim 22, wherein the instructions for tracking track the disk angular orientation features with the OPU.

7. A processor-readable medium as recited in claim 22, wherein the instructions for tracking track the disk angular orientation features with the encoder.

8. A processor-readable medium as recited in claim 22, wherein the controlling comprises instructions for:

processing the disk speed data to determine times when the speed of the spindle motor should be increased and times when the speed of the spindle motor should be decreased to maintain desired speed.

9. A processor-readable medium as recited in claim 22, wherein the interpreting comprises instructions for:

distinguishing between a first and a second signal received from the encoder, wherein

the first and second signals result from differences in light reflection corresponding to the presence or absence of the disk speed features.

10. A processor-readable medium as recited in claim 22, wherein the interpreting comprises instructions for:

distinguishing between a first and a second signal received from the encoder, wherein the first signal results when light is reflected off a mirrored surface to a sensor and the second signal results when light is reflected by a saw tooth feature that also deflects a portion of the light away from the sensor.

11. A processor-readable medium as recited in claim 22, wherein the interpreting comprises instructions for:

distinguishing between a first and a second signal received from the encoder, wherein the first signal results when light is reflected off a mirrored surface and wherein the second signal results when light is reflected by a substantially circular molded pit that also deflects a portion of the light away from the sensor.

12. A processor-readable medium as recited in claim 22, wherein the interpreting comprises instructions for:

distinguishing between the output signals, wherein the output signals are associated with levels of light reflectivity within a region defined on a mirror surface adjacent to the coating on the label side of the disk.

13. An optical disk drive, comprising:

means for controlling a rate at which a spindle motor spins an optical disk;

means for gathering disk speed data by tracking a plurality of substantially identical disk speed features defined on the optical disk as the optical disk is spun by the spindle motor, each of the disk speed features spaced apart substantially equally in a first annular ring at a first radial position on the optical disk and having an angular span that is substantially

identical to an angular span of a gap between each two of the disk speed features;

means for tracking, with an OPU, disk angular orientation data defined by disk angular orientation features defined in a second annular ring at a second radial position on the optical disk, wherein the second annular ring abuts the first annular ring, and wherein the annular rings are proximate a central hub of the disk; and

means for labeling the optical disk according to the disk speed data and the disk angular orientation data.

14. The optical disk drive of claim 13, additionally comprising:

means for passing the disk angular orientation data to the means for labeling to create an image having a desired angular orientation on a coating on the optical disk.

15. The optical disk drive of claim 13, wherein the disk angular orientation features are molded features located radially inside an area on the optical disk reachable by an OPU, to produce the disk angular orientation data.

16. The optical disk drive of claim 13, additionally comprising:

means for processing the disk speed data from an encoder to determine times when speed of the spindle motor should be increased and times when the speed of the spindle motor should be decreased.

17. The optical disk drive of claim 13, wherein the means for gathering disk speed data comprises:

means for distinguishing between a first and a second signal received from an encoder, wherein the first and second signals result from differences in light reflection corresponding to the presence or absence of the disk speed features.

18. The optical disk drive of claim 13, wherein the means for gathering disk speed data comprises:

means for distinguishing between a first and a second signal received from an encoder, wherein the first signal results when light is reflected off a mirrored surface to a sensor and the second signal results when light is reflected to the sensor by a saw tooth feature that also deflects a portion of the light away from the sensor.

19. The optical disk drive of claim 13, wherein the means for gathering disk speed data comprises:

means for distinguishing between a first and a second signal received from an encoder, wherein the first signal results when light is reflected off a mirrored surface to a sensor and wherein the second signal results when light is reflected to the sensor by a substantially circular molded pit that also deflects a portion of the light away from the sensor.

20. The optical disk drive of claim 13, wherein the means for gathering disk speed data comprises:

means for distinguishing between encoder sensor outputs associated with levels of light reflectivity within a region defined on a mirror surface adjacent to a coating on the disk.

21. An optical disk drive, comprising:

a spindle motor to turn an optical disk;

an OPU to apply an image to a coating within a label region of the optical disk; and

an encoder configured to track substantially identical disk speed features in a first annular ring at a first radial position on the optical disk in a region distinct from the label region so as to thereby obtain disk speed data, the disk drive further configured to track disk angular orientation features different from the disk speed features in a second annular ring at a second radial position on the optical disk so as to thereby obtain angular orientation data, the second annular ring abutting the first annular ring, the annular rings proximate a central hub of the disk, the disk angular orientation features different from the disk speed features, and at least some of the disk angular orientation features having an overlapping angular position with at least some of the disk speed features.

22. A processor-readable medium comprising processor-executable instructions for labeling an optical disk, the processor-executable instructions comprising instructions for:

controlling a spindle motor within an optical disk drive to regulate angular speed of the optical disk;

interpreting output signals of an encoder resulting from sensation of substantially identical disk speed features defined in a first annular ring at a first radial position on the optical disk as the optical disk is spun by the spindle motor to produce disk speed data;

tracking disk angular orientation features defined in a second annular ring at a second radial position on the optical disk and different from the disk speed features to produce disk angular orientation data, at least some of the disk angular orientation features having an overlapping angular position with at least some of the disk speed features, the second annular ring abutting the first annular ring, and the annular rings proximate a central hub of the disk; and

marking a coating on the optical disk with an OPU, wherein the OPU is operated according to the disk speed data and the disk angular orientation data.

24. The optical disk drive of claim 21, wherein the first radial position is nearer the central hub of the disk than the second radial position.

25. The processor-readable medium as recited in claim 22, wherein the first annular ring is nearer the central hub of the disk than the second annular ring.

26. The optical disk drive of claim 13, wherein the first annular ring is nearer the central hub of the disk than the second annular ring.

27. The optical disk drive of claim 21, wherein the location of the annular rings on the optical disk maximizes the size of a continuous area of the label region.

28. The optical disk drive of claim 21, wherein the label region has a ring shape that extends from an inner radial position to an outer radial position, and wherein at least one of the first and second radial positions is closer than the inner radial position to the central hub.

29. The processor-readable medium as recited in claim 22, wherein the location of the annular rings on the optical disk maximizes the size of a continuous area of the label region.

30. The processor-readable medium as recited in claim 22, wherein the label region has a ring shape that extends from an inner radial position to an outer radial position, and wherein at least one of the first and second radial positions is closer than the inner radial position to the central hub.

31. The optical disk drive of claim 13, wherein the location of the annular rings on the optical disk maximizes the size of a continuous area of the label region.

32. The optical disk drive of claim 13, wherein the label region has a ring shape that extends from an inner radial position to an outer radial position, and wherein at least one of the first and second radial positions is closer than the inner radial position to the central hub.

33. The optical disk drive of claim 21, wherein the label region has a ring shape that extends from an inner radial position to an outer radial position, and wherein the first and second radial positions are closer than the inner radial position to the central hub.

X. EVIDENCE APPENDIX

None

XI. RELATED PROCEEDINGS APPENDIX

None